

Notice of Allowability

Application No.

10/575,718

Examiner

Hung Lam

Applicant(s)

IGA ET AL.

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 11/02/2007.
2. ☒ The allowed claim(s) is/are 23-28.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


BRIAN HEALY
PRIMARY PATENT EXAMINER

DETAILED ACTION

Status of the Application

New claims 23-28 have been added.

Claims 1-22 are cancelled.

Claims 23-28 are allowed.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance:

The prior art does not show or fairly suggest the claimed invention of an optical fiber sensor having the claimed structure and claimed limitations, wherein a rejection under 35 USC 102 or 103 would be improper.

Watanabe et al. (US. Pat. 6,449,400) and **Chang** (US. Pub. 2003/0133654) further in view of **Watanabe et al.** (JP. Pub. 2002-350335) and **Murphy et al.** (US. Pat. 4,894,532) are the most relevant prior arts of record.

Watanabe et al. discloses an optical fiber and sensor system comprising the following such as a mode restriction releasing means including an optical fiber portion 2, a sensor element 3 (light permeable member or a hetero core) has core 31 with a diameter that differs from the core 21 of the optical fiber portion 2 and also is shorter than the optical fiber portion 2, which is fusing or melt bonded to the optical fiber portion 2, guiding at least a portion of the light transmitted by the optical fiber portion 2 to the outside of a core 31 to release the restriction of the mode of the light (back-scattered light), and returning the light released in the restriction of

the mode into the core 31 and 21 (col. 1 lines 57-65, col. 2 lines 9-18, col. 3 lines 37-44, and Fig. 1 and 5); a light source (light pulses) which is controlled by an operating unit 12 that connected to the optical fiber portion side end of the optical fiber sensor and emitting light to the core of the optical fiber sensor (col. 4 lines 36-41, and Fig. 1); a display unit 11 or a light detecting means for the detecting direct intensity of returned light returning to the light source side via the core of the sensor element 3 and the optical portion 2 (col. 5 lines 20-50, and Fig. 1). However, **Swift et al.** only teach that the light permeable member or the sensor element 3 that is fusing or melt bonded to the optical fiber portion 2 **but not to** the front end of the optical fiber portion 2.

Chang teaches an optical fiber collimator including a single mode fiber 11 (optical fiber portion) and a multi mode fiber 12 (light permeable member) that spliced fusing to the front end of the single mode fiber ([0020], and Fig. 2A).

Watanabe et al. (JP. Pub. 2002-350335) teach an optical fiber and sensor system including the following such as a metal film 17 provided at a surface side of said hetero core 14 and generating surface plasmon, and the metal thin film 17 is formed in the front face in the interface 19 of the hetero core 14 that reflected the light in the hetero core 14 and returning the light to the optical fiber portion 11 (“abstract”, [0012], [0028], Fig. 2).

Murphy et al. teach an optical fiber interferometer including a reflection film 22 at the end face of the sapphire fiber 14 or hetero core (col. 5 lines 31-34, and Fig. 2).

Regarding **claims 23-25 and 27**, **Watanabe et al.** (US. Pat. 6,449,400) and **Chang** further in view of **Watanabe et al.** (JP. Pub. 2002-350335) and **Murphy et al.** in combination, however, still not render obvious in combination or the modification/comboination device may not function properly, because it fails to teach “a metal film provided at a surface side of said

hetero core and generating surface plasmon by reflection of light in the hetero core at that surface; and reflection means for reflecting light in the hetero core and returning the light to said optical fiber portion side at the surface of the end of the hetero core opposite to the end melt bonded to the optical fiber portion” and “a detection chemical immobilizing film selectively reacting with a detection object at the outside of said hetero core and giving a change in accordance with that reaction to the light in the hetero core formed at a surface side of said hetero core”.

Therefore in light of the Applicant’s amendment, claims 23-25 and 27 are allowable as distinguishes over the prior art of record because of the reason stated above. It is this examiner’s position that prior art taken alone, fails to disclose or render obvious in combination with the rest of the limitations discussed above.

Claims 26 and 28 are allowable as dependent claims of claims 25 and 27.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Conclusion

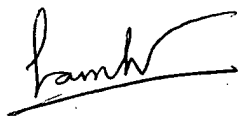
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Lam whose telephone number is 571-272-9790. The examiner can normally be reached on M - F 07:30 AM - 05:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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